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Vierteljahrshefte zur Wirtschaftsforschung

Provided in Cooperation with:

German Institute for Economic Research (DIW Berlin)

Suggested Citation: Rendtel, Ulrich; Wagner, Gert G. (1992) : Micro income change in the Federal Republic of Germany between 1984 and 1989, Vierteljahrshefte zur Wirtschaftsforschung, ISSN 0340-1707, Duncker & Humblot, Berlin, Vol. 61, Iss. 3/4, pp. 131-137

This Version is available at:

<https://hdl.handle.net/10419/141026>

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Micro Income Change in the Federal Republic of Germany between 1984 and 1989

by Ulrich Rendtel and Gert G. Wagner

The German Socio-Economic Panel (SOEP) is an annual panel survey being started in 1984 that can be placed under the heading of population and income statistics. The SOEP data amplified official statistics, both regarding additional variables that arise as well as the longitudinal character of the data, i.e. the repeated surveying of the same respondents (cf. Wagner et al. 1991).

The SOEP sample started with 5 921 households where 16 205 adult persons lived. After seven waves (in 1990) 4 640 households with 10 077 household members are still in the sample (cf. Rendtel 1991a, b; Wagner 1991).

There is an anthology available now entitled „Lebenslagen im Wandel: Zur Einkommensdynamik in Deutschland seit 1984“ [Changing situations: income dynamics in Germany since 1984], which contains numerous income analyses (see Rendtel and Wagner 1991). Some of the most interesting results shall be reported here.

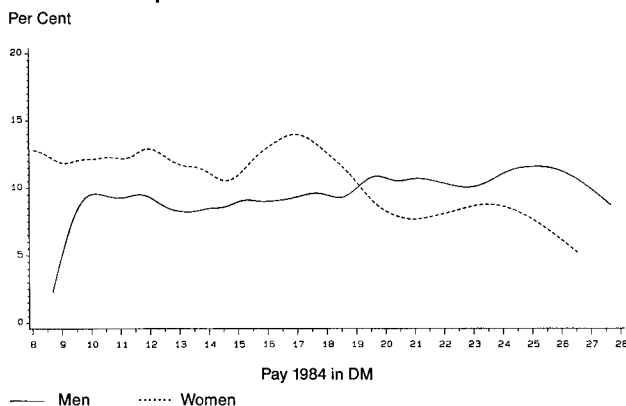
1. Trends in earned income

In addition to development in the average level of real income, developments in the distribution of income are also of particular interest. Income comparisons over time are often conducted in such a way that, for various groups, incomes at the same points in the distribution of income on two occasions are placed in relation to one another and the percentage increases are compared. For example, the differences between male and female wage and salary earners are of particular interest in the context of economic policy. The following analysis covers wage and salary earners and public officials. Trainees are excluded, as are self-employed persons¹ (see Rendtel and Schwarze 1991).

Figure 1 shows the percentage increases in real gross wage rates², compared at the same income position for 1984 and 1989. This is a comparison of two cross-sections. The results show in the lower to middle income groups an above-average percentage increase in the income earned by women compared with men. It could thus be concluded that developments in women's earnings from 1984 to 1989 had made up for the arrears of income in comparison with men.

Figure 1

Percentage Increase in real¹⁾ pay rates from 1984 to 1989
on the same income position —
Comparison for German men and women



¹ Deflated in line with the price index for private households.
Source: SOEP, Waves 1-6 (1984-1989).

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If we now pass to longitudinal analysis and try to measure genuine income developments on the labour market, we find various ways of delimiting the survey population. In order to measure the influence of the labour market with as little distortion as possible, the following excludes persons embarking on a career³, as well as those persons who gave up employment between the survey dates and those with a break in employment (primarily unemployment and motherhood). This means that developments in women's earnings tend to be presented more favourably, as the negative influences of breaks in employment on earnings trends cannot appear.

Figure 2 shows the distribution of real hourly pay rates in 1989 with a given starting wage in 1984 (here, the example

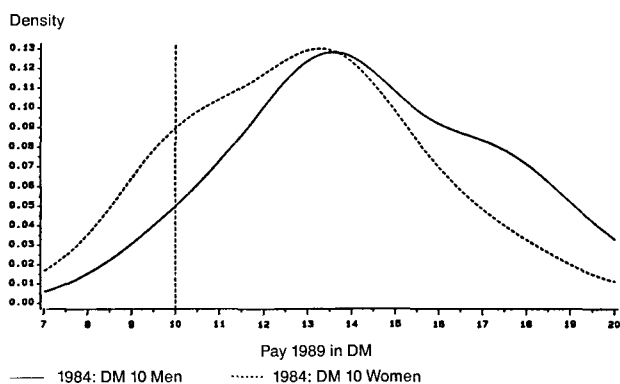
¹ Immigrants are also excluded owing to the difficulty in monitoring special developments.

² The price index for private households has been employed for deflating. In 1989 the deflator was 0.946.

³ More precisely: persons embarking on a career between 1985 and 1989.

Figure 2

Distribution of real¹⁾ pay rates for 1989 with a starting rate of DM 10 in 1984 — Comparison for German men and women



¹ Deflated in line with the price index for private households.
Source: SOEP, Waves 1-6 (1984-1989)

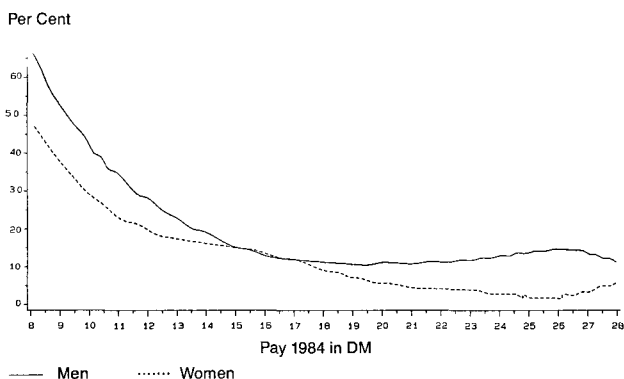
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of an hourly pay rate of DM 10 for 1984 has been selected). The fluctuations in the real gross pay figure are considerable. A more precise analysis shows that only 50 per cent of the income processes result in no appreciable change in the individual income position. This high level of variability shows that the basic assumption of cross-sectional comparison — the stability of the wageposition — is only insufficiently fulfilled. If we now pass to a gender-specific consideration of growth in individual incomes, a completely different picture is revealed from that in the comparison of two cross-sections: with the same starting wage, the trend is more favourable for men than for women. The median wage increase is approximately DM 1 higher for men than for women, equivalent to 10 per cent of the starting wage in 1984.

In Figure 3, this comparison of the median of real pay increments with a given starting wage figure is implemented over a spread of DM 8 to DM 28. The percentage rates of increase dependent on the starting wage can now be compared with the growth rates in the cross sectional comparison. For workers employed over the entire period of the analysis, the growth rates in income were on average 14.7 per cent. This is about 5.7 percentage points higher than in the cross-sectional analysis (9 per cent). This varying level of pay increases is based, inter alia, on a lower income dynamic in the case of persons dropping out of employment and persons with breaks in employment, who have to be included in the customary cross-sectional analysis. On the other hand, the basic assumption with cross-sectional comparisons (constancy of the income position) is frequently not met in the lower income group. Consequently, the high income increases of 40 per cent in the lower sector of hourly pay rates are not reproduced in the cross-sectional trend. Major pay increases of this kind over a period of five years are quite conceivable for persons embarking on a career. Here the influence of typical gender-specific

Figure 3

Percentage increase in the median¹⁾ of real²⁾ growth in pay rate to 1989 with a given starting pay rate in 1984 — Comparison for German men and women



¹ The median denotes the value in income distribution below which 50 % of all income lies.

² Deflated in line with the price index for private households.

Source: SOEP, Waves 1-6 (1984-1989).

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earnings patterns is visible, but these result in larger increases in earnings for men than for women. In almost all income groups (starting rate 1984) increases for men are above those for women. Only the middle income group provides an exception.

It should be noted that this lower earnings growth in comparison with men applies to those women who have had no break in employment over the entire period of the analysis. For women with breaks in employment, the trend is even less favourable. The continued pronounced increase in the number of women in employment in recent years has not yet resulted in complete elimination of the relative difference in income⁴.

2. Unemployment and income dynamics

The question of the extent to which unemployment has a negative effect on the development of earnings is of particular importance for the trend in income of wage and salary earners⁵.

In earning patterns⁶, where a number of other influences shaping pay are monitored (see Table 1), the influence on income of education and vocational training (human ca-

⁴ For econometric results supporting these findings, see also Backes et al (1991) and Szydlík (1991).

⁵ For what follows, see Loewenbein and Rendtel (1991). Licht and Steiner (1991) and Mueller (1991) are also working with the aid of the SOEP data, using the same method of approach. In addition, an exploratory analysis of the individual trend in income in East Germany between 1989 and 1990 (Schwarze 1991) has also been produced, using similar microeconomic techniques.

⁶ Taken as gross wage or salary of German men employed as blue- or white-collar workers or officials.

Table 1

Regression between the level of gross earnings¹⁾ Y and 20 regression variables²⁾ X_p

$$Y = \exp(\text{const} + \beta_1 X_1 + \dots + \beta_{20} X_{20})$$

Variable	Coefficient β_p	t statistic
Education in years	0.081	34.3
Years of full employment	0.025	18.4
Square of the years of full employment ³⁾	-0.005	-15.6
Years of service with company	0.002	5.8
Disabled	-0.010	-1.9
Married	0.053	6.8
Employment in the public sector	-0.083	-6.7
Employment in large company	0.054	5.9
White-collar worker	0.088	11.6
Official	-0.028	-1.7
Education in years in careers with unemployment	-0.023	-10.3
Education in years with the commencement of retirement on a pension	-0.003	-2.5
Education in years in careers involving self-employment	-0.006	-2.5
Employment in large companies in careers with unemployment	0.053	1.7
Married, in careers with unemployment	0.110	4.1
Working hours below 35 hours in careers with unemployment	-0.249	-11.9
1985	0.014	3.4
1986	0.048	11.3
1987	0.088	13.7
1988	0.114	24.4
const.	6.802	229.0

1) Gross earnings of German men employed as blue- or white-collar workers or officials. — 2) Coefficients which differ significantly from zero from an assessment with 25 explanatory variables. — 3) Simultaneously taking into account the duration of full employment and the square of this regression value simulates mathematically the typical pattern of income with increasing employment experience. Incomes begin by increasing markedly and then level out or fall again in the case of lengthy employment.

Source: SOEP, Waves 1-5 (1984-1989).

pital) is markedly smaller in the case of persons subject to periods of unemployment than where this is not the case (5.8 per cent increase in income per year of training compared with 8.1 per cent increase per year).

For a worker with ten years of education⁷ and a gross income of DM 4 000, the deteriorating effect of a period of unemployment (with otherwise identical characteristics) on education is some DM 820 (in real terms for 1984), and where there is a 15-year period of education it is as much as DM 1 170. However, the overall differences in income that result are not quite as large, as the pay-shaping influence of other variables (such as employment in a large company) increases in the case of careers including some unemployment. In the case of a married employee who works in a large company with a workforce exceeding 2 000 and would have a gross income of DM 4 000 if he had been subject to no periods of unemployment, a spell of unemployment causes a reduction in income to DM 3 740 (i.e. a reduction of about 6.5 per cent) if he has had ten years of education, and to DM 3 330 if he has had fifteen years of education (i.e. a reduction of 16.7 per cent).

The negative effect of unemployment on the trend in income does not mean that there are major changes in income before and after unemployment. The effects of unemployment on income are by no means always felt directly. It is rather the case that persons who were formerly

unemployed compete with people who were not unemployed in the interim and whose income patterns are more favourable overall. They often use a change of post to achieve significant increases in income (of some 10.6 per cent on average)^{8,9}. Employees who neither become unemployed nor change their employer are often part of the so-called "internal market segment" and are promoted by their employer (usually large companies) within the company itself. This mechanism, too, has a clearly positive influence on increases in income, one which is not available to the unemployed (see Szydlík 1991, based on SOEP, in this regard).

⁷ The duration of education is measured according to the minimum for the various examinations. Individually extended periods of training and education do not increase "human capital".

⁸ For further SOEP results see Klein and Hocke (1991) and Gerlach and Schasse (1991), who show that workers who have themselves given notice are more successful in the transfer of general human capital in the new job than are workers who are dismissed. In addition, according to the findings of Gerlach and Schasse, voluntary changes of employment also have a clearly positive influence on job satisfaction; here, in addition to pay, other job characteristics play a decisive role.

⁹ In addition, according to the findings of SOEP, profit-sharing schemes are not a substitute for wages/salaries, but a supplement. According to the findings of Huebler (1991), both the introduction of profit-sharing and increasing incomes serve to retain staff or to attract new and qualified staff.

In this connection, a further result based on the SOEP is of particular interest from the point of view of labour-market policy. A short-term break in a period of otherwise lengthly unemployment has — according to figures which still require further corroboration, however — no positive effect on earnings (see Buechel 1991, p 320 et seq). It can be concluded from this that short-term, interim periods of employment should have no negative influence on the calculation of unemployment benefit, as short-term employment is subsequently of little benefit to the workers or unemployed persons concerned.

3. Household-income dynamics

In a comprehensive analysis, it is not personal income which determines the living standards of persons as parts of a household but the income of the household. The above-average incomes of certain groups of people can be levelled out in a household while, conversely, individually poor incomes cannot be offset at the level of the household. In analysing the distribution of income, the lower income sector is traditionally of particular interest. There is a thesis that, owing to the high level of unemployment in the 1980s, the Federal Republic of Germany has become a "two thirds society", in which two thirds of households are not affected by economic problems but one third are in the lower income group.

If this thesis is to be examined empirically, it is difficult to define the situation represented by the term "poverty". In the meantime it has become customary to define specific percentage figures of the average income as "a poverty line"¹⁰. Extreme poverty is understood as being an income that is below the 40 per cent mark. The "standard poverty line" is the 50 per cent mark, and the 60 per cent mark also includes "income positions close to the poverty level" (see Habich et al 1991a). If we also take into consideration Table 2, "Those affected by poverty" in the SOEP sample

1984-1989, the overall picture revealed is a stable one. Only in the last year of the period under review does an improvement in lower incomes appear to be indicated, owing to the development of business activity and a noticeable improvement in the labour market.

But even a measurement based on the relatively "broad" 60 per cent poverty line fails by a long way to include a third of low-income households. Measured against the extreme-poverty line, some 5 per cent of all private households can be described as low-income¹¹. Measured against the 50 per cent poverty mark, some 10 per cent of all persons in private households can be described as poor, whereby there is a remarkable difference between households with a German head and those with an immigrant at the head. The risk of poverty is more than twice as high for immigrant households as it is for German households.

If we turn to a dynamic consideration (see Table 3), the image of a stable but small group of low-income house-

¹⁰ In the analysis of household incomes, the problem arises that in order to ensure comparability the household structure has to be monitored or corrected. The simple calculation of per capital income distorts the picture, as it does not take into account the facts that larger households have advantages owing to a decrease in costs, and the income requirement also varies with age. For that reason it has now become usual to calculate so-called "equivalence incomes", which involve a "graded per capita calculation" according to the size of the household and the age of its members. The regular rates under the Federal Public Assistance Act are used as a "needs weighting". This procedure is, of course, worthy of discussion but Rohwer (1991) has shown, using SOEP data, that the global findings for the income dynamics of households are influenced very little by assumptions about the needs weighting which vary within the range of what is plausible.

¹¹ This category also includes, of course, people in institutions and the homeless, whose poverty risk is difficult to quantify. It can, however, be assumed that all those with no fixed abode are on low incomes. Their numbers can be quantified as approximately 0.5 per cent of the population.

Table 2

Those affected by poverty in the Federal Republic of Germany
1984 to 1989

Poverty line		1984	1985	1986	1987	1988	1989
		in Per Cent					
„Extreme poverty” 40 %-mark ¹⁾		5.1	4.4	5.3	4.9	5.2	4.4
„Poverty” 50 %-mark ¹⁾	Overall	11.0	11.0	12.4	10.6	10.7	10.7
	Germans	10.3	10.2	11.5	9.9	10.1	8.8
	Immigrants	24.1	24.8	29.4	24.4	22.9	24.3
„Income close to poverty level” 60 %-mark ¹⁾		20.8	20.0	22.0	20.3	20.2	19.3
¹⁾ Per cent of the average income (net) of all private households. Source: SOEP, Waves 1-6 (1984-1989).							

Table 3

**The frequency of poverty in the Federal Republic
1984 to 1989**

		Number of times below the poverty line as in per cent						
		0	1	2	3	4	5	6
Poverty lines 40 %-mark ¹⁾		86.7	7.0	2.7	1.0	1.1	1.1	0.4
50 %-mark ¹⁾	Overall	74.7	10.6	4.2	3.6	2.3	1.8	2.7
	Germans	76.2	10.3	4.0	3.5	1.9	1.6	2.5
	Immigrants	49.7	15.2	8.6	6.8	8.0	5.3	6.4
60 %-mark ¹⁾		60.6	11.8	6.5	5.3	3.8	4.9	7.1

¹⁾ Per cent of the average income (net) of all private households.
Source: SOEP, Waves 1-6 (1984-1989).

holds vanishes. If we consider the full six year period it can be seen that the risk of falling below the poverty threshold — at least for a short period¹² — increases considerably. Over the entire period, measured against the extreme-poverty line, only a little over 85 per cent of all households had never been affected by poverty and, measured against the second level of 60 per cent, only 60 per cent had never been affected¹³. Measured against the standard poverty line of 50 per cent, almost 25 per cent of all German households had to be described as low-income at least once over the six years. In the case of immigrant households, 50 per cent have fallen below the poverty line on at least one occasion.

Of particular interest is the question of how high the risk of poverty is for those on average incomes. This question was investigated by analysing what proportion of those households with an average income in 1984¹⁴ were affected by poverty in the following five years.

Table 4 shows that 8.3 per cent of Germans and 22.3 per cent of immigrant workers on an average income in 1984 fell below the 50 per cent poverty threshold at least once between 1985 and 1989. This proportion is surprisingly high

Table 4

**Poverty risk with average household incomes
1985 to 1989**

	Per cent of persons with 80-120 % of the average household income in 1984 were in 1985-1989 ...		
	Never below the poverty line ¹⁾	below the poverty line at least once ¹⁾	below the poverty line more than 50 % of the time ¹⁾
Total	91.1	8.9	1.8
Germans	91.7	8.3	1.8
Immigrants	77.7	22.3	3.8

¹⁾ 50 %-Mark (see Table 2).
Source: SOEP, Waves 1-6 (1984-1989).

considering the relatively short period of five years. With reference to a full life span of 70 or 80 years, it can thus be assumed that a rather high percentage of the population is confronted with poverty on one or more occasions.

The large fluctuation of households in the poverty range should not make us overlook the fact that a certain proportion of households has a poor chance of escaping from it permanently (see Berntsen and Rendtel 1991). For example, the risk of remaining in poverty doubles or trebles according to the duration of the previous period of poverty (see Table 5). If one takes into account those households

Table 5

**The risk of remaining in poverty depending
on the income position of the preceding period**

Income position ¹⁾ in the preceding period	Risk of remaining in poverty in per cent	
	from Wave 2 to Wave 3	from Wave 3 to Wave 4
Germans		
below 40 %	75,0	74,6
40-50 %	66,6	75,6
50-60 %	53,1	70,6
über 60 %	24,0	55,3
Immigrants		
below 40 %	89,0	89,0
40-50 %	79,3	84,3
50-60 %	94,8	54,6
über 60 %	60,0	43,7

¹⁾ Per cent of the average income (net) of all private households.
Source: SOEP, Waves 1-4 (1984-1987).

¹² That means at least in the survey month.

¹³ A two-thirds to one-third situation can be seen here, if one so wishes. This division does not, of course, take into account the basic assumption of the two thirds thesis, namely that one third of all persons can be described permanently as poor.

¹⁴ An average income was deemed to mean all incomes which were between 80 and 120 per cent of the median value.

which may just scrape over the more or less arbitrary "poverty lines", it will be seen that 50 per cent of the German households in a position of obvious poverty will, after four years, again be in this position. A mere 25 per cent manage to rise to a secure position above the poverty line, and a further 25 per cent remain in the grey area between poverty and non-poverty (see Table 6).

Table 6

The probability of transition between income positions in Waves 1 and 4

Income position ¹⁾ in Wave 1	Income position in wave 4		
	Clear poverty	Grey area	No poverty
Germans			
Clear poverty	54,5 ²⁾	22,1	23,4
Grey area	7,7	53,4	38,9
No poverty	3,7	3,5	92,8
Immigrants			
Clear poverty	71,1	18,4	10,5
Grey area	15,5	49,2	35,3
No poverty	2,8	15,5	81,7

1) For a methodical description of poverty areas see Berntsen and Rendtel (1991). — 2) Probability given in per cent.
Source: SOEP, Waves 1-4 (1984-1987).

An analysis of the changes in the income position and the risks of impoverishment in the SOEP shows that a change in the size of households is one of the most important causes of poverty or of overcoming poverty (see Klein and Zimmermann 1991). Giving up gainful employment in general is only a small influence on the risk of poverty, while the influence of unemployment is greater: this is much more markedly the case with men than with women. But in general, unemployment insurance successfully prevents poverty in the vast majority of cases. The occurrence of disability has scarcely any influence on poverty. This may be partly due to the fact that, owing to legislation and the attitude of employers, disability occurring during employment does not lead to loss of income, as employers do not wish to discriminate against disabled members of the workforce¹⁵.

The results to date give an overall picture of an impoverished section of the population in which the larger part is constantly changing, while a smaller proportion remains permanently in poverty. This picture is confirmed if we pass to "manifest poverty" in the form of the receipt of welfare benefits, which was also included in the SOEP (see Voges and Rohwer 1991). Household size is again significant for the determinants of receipt of welfare benefits.

Women and immigrants have a higher risk. It is important that under statistical control of all the influencing factors mentioned, the probability of ceasing to draw welfare benefits becomes less the longer such benefits have already been drawn.

This finding verifies how important it would be if the social assistance administration was relieved of the "care" risk so that it could, in line with its statutory mandate, take active steps to show recipients of welfare benefits a way out of need at an early stage. It would be just as important if the social security system did not merely deal with the consequences of direct labour-market problems, where unemployment insurance successfully prevents poverty in the vast majority of short term unemployment spells. The social security system should also take better account of family events. A comparison — based on the SOEP — of the income situation of divorced women in the Federal Republic of Germany and the USA produces the surprising result that the economic situation of divorced women is no worse in the USA than in the Federal Republic, although the welfare state is far more fully developed overall in the FRG than in the USA (see Burkhauser et al 1991).

4. Conclusions and outlook

The longitudinal analyses of trends in income since 1984, discussed here on the basis of the SOEP, show that, on the one hand, there was considerable growth in individual incomes between 1984 and 1989, but on the other hand, trends in income in the upper and lower income groups were less favourable for women than for men. It can be shown that in the case of men unemployment has long-term consequences for income trends.

Provisional results also show that, in the short term, unemployment interrupted by periods of employment almost entirely fails to alleviate this effect. Nevertheless, society in the old Federal Republic of Germany by no means represents a two-thirds society: only in a very small section of the population is there permanent poverty. But one finding is surprising: the not inconsiderable risk (9 per cent) faced by average wage earners of falling below the poverty line (50 per cent threshold) at least once in the course of five years.

Demographic changes in a household (birth of children, divorce) are at least as significant for the poverty risk as unemployment. The social security system, which usually successfully overcomes immediate income problems connected with short unemployment, should devote more attention to self-help on the one hand and family events on the other.

With the increasing operational life of the Socio-Economic Panel the analytical potential of this data base is yielding more results. In June 1990 the SOEP was extended to the territory of the former German Democratic Republic (see Wagner et al. 1991). The sample covers 2 179 households with 6 044 respondents. For first results of income development on the base of the first and second wave cf. Heady et al (1991b).

¹⁵ See Backes-Gellner et al (1991, p 235 et seq). The disabled are, however, discriminated again on the labour market when they seek employment.

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